CDC Recommendations for Improving Health through Transportation Policy

Centers for Disease Control and Prevention

The U.S. transportation system has been shaped by multiple policy inputs and concrete actions which have arisen from transportation and community planners, funding agencies and others at Federal, state and local levels. Today, the system is designed to move people and goods efficiently; however, there is a growing awareness across communities that transportation systems impact quality of life and health. Government and non-government agencies are seeking innovative policies and programs that protect and promote health while accomplishing the primary transportation objectives.

The Opportunity

Expanding the availability of, safety for, and access to a variety of transportation options and integrating health-enhancing choices into transportation policy has the potential to save lives by preventing chronic diseases, reducing and preventing motor-vehicle-related injury and deaths, improving environmental health, while stimulating economic development, and ensuring access for all people.

With this goal in mind, the Centers for Disease Control and Prevention (CDC) has identified transportation policies that can have profound positive impact on health. CDC supports strategies that can provide a balanced portfolio of transportation choices that supports health and reduces health care costs. Transportation policy can:

- Reduce injuries associated with motor vehicle crashes
- Encourage healthy community design
- Promote safe and convenient opportunities for physical activity by supporting active transportation infrastructure
- Reduce human exposure to air pollution and adverse health impacts associated with these pollutants
- Ensure that all people have access to safe, healthy, convenient, and affordable transportation

Rationale

The current U.S. transportation infrastructure focuses on motor vehicle travel and provides limited support for other transportation options for most Americans.

- Physical activity and active transportation have declined compared to previous generations. The lack of physical activity is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke and other chronic health conditions in the United States.
- Motor vehicle crashes continue to be the leading cause of injury-related death for many age groups. Pedestrians and bicyclists are at an even greater risk of death from crashes than those who travel by motor vehicles.
- Many Americans view walking and bicycling within their communities as unsafe because of traffic and the lack of sidewalks, crosswalks, and bicycle facilities.

- Although using public transportation has historically been safer than highway travel in light duty vehicles, highway travel has grown more quickly than other modes of travel.
- A lack of efficient alternatives to automobile travel disproportionately affects vulnerable populations such as the poor, the elderly, people who have disabilities and children by limiting access to jobs, health care, social interaction, and healthy foods.
- Although motor vehicle emissions have decreased significantly over the past three decades, air pollution from motor vehicles continues to contribute to the degradation of our environment and adverse respiratory and cardiovascular health effects.
- Transportation accounts for approximately one-third of all U.S. greenhouse gas emissions contributing to climate change.

Recommendations

The following are key recommendations for bringing public health considerations into transportation issues.

Reduce injuries associated with motor vehicle crashes

Motor vehicle travel has become safer over time, but motor vehicle crashes are still the leading cause of death for people ages 1–34. Improving the safety and efficiency of motor vehicles and their occupants is critical to improving transportation policy and the public's health. Transportation policies are needed to improve the safety of motor vehicles and their occupants to prevent crashes, and advances in medical care are needed to increase the survivability of victims of crashes that do occur.

Recommendations:

- Provide incentives to states that implement, strengthen, and/or continue to use effective interventions that improve road traffic safety. Examples of interventions include:
  - Primary seatbelt laws
  - Child safety seat and booster seat laws
  - Alcohol-impaired driving countermeasures
  - Motorcycle and bicycle helmet laws
  - Distracted driving laws
  - Lower speed limits and other efforts to reduce speeding within communities.
  - Comprehensive graduated driver licensing systems
  - Roadway design measures such as installation of centerline rumble strips
  - Education on safe driving, bicycling, and walking
  - Community designs that promote reduced traffic speeds in neighborhoods
- Increase support for new and existing technologies to improve the safety of motor vehicles. Examples include:
  - Technologies that enable vehicles to withstand crashes with lower risk of injuries to occupants
  - Vehicle designs and technologies that lower risk for non-occupants
  - Technologies to prevent alcohol impaired driving

- Study the effectiveness of providing incentives for Americans to reduce vehicle miles traveled by using alternatives to single occupancy vehicle travel. Examples of strategies include:
    - High occupancy vehicle lanes
    - Congestion pricing
    - Parking pricing
    - Carpools, vanpools, and improved public transportation
- Bring health, transportation and community planners together to address roadway safety issues through community design.
- Ensure access to trauma care for victims of motor vehicle crashes in order to improve survival outcomes after a crash.

Improve Air Quality

Transportation-related air pollutants are one of the largest contributors to unhealthy air quality. Exposure to traffic emissions has been linked to many adverse health effects including: premature mortality, cardiac symptoms, exacerbation of asthma symptoms, diminished lung function, increased hospitalization and others. Motor vehicles are a significant source of air pollution in urban areas.

Recommendations:

- Reduce human exposure to transportation-related air pollution and the adverse health impacts associated with air pollutants by:
    - Retrofitting existing diesel vehicles with current pollution control measures to reduce emissions.
    - Requiring effective inspection and maintenance programs for medium- and heavy-duty vehicles.
    - Providing incentives for motor vehicle drivers to purchase vehicles with technologies designed to control pollution and reduce emissions.
    - Strengthening congestion mitigation and air quality programs.
    - Seeking solutions to reduce pollution generated by ports, high-volume roadways and railroads
- Improve the respiratory and cardiovascular health of the U.S. population by improving air quality. Possible strategies include:
    - Promoting transportation choices and innovative transportation measures that reduce emissions
    - Shifting to active transportation and public transportation modes
    - Reducing vehicle miles traveled per capita
- Support policies that reduce environmental pollution (including greenhouse gas emissions) by changing to renewable energy sources, strengthening fuel efficiency policies, and expanding programs that reduce the number of vehicles in the fleet with poor fuel economy.

Expand Public Transportation

Public transportation systems reduce the necessity for single occupancy vehicle trips, reduce the production of automobile emissions, increase incidental physical activity, and provide necessary transportation access for people with physical, economic, or other limitations that impede their access to and use of a single occupancy motor vehicle. Policies that encourage public transportation infrastructure are needed to improve access for all people.

Recommendations:

- Explore opportunities to increase funding to strengthen the positive health impacts associated with expanded public transportation options. For example:
    - Encourage funding decisions that strengthen public transportation
    - Encourage states to increase investments in public transportation, congestion relief, air quality improvements, and other options, and to remove barriers to use of gas tax revenues for public transportation and bicycle-pedestrian improvements
    - Give state, regional, and local governments more flexibility to choose from transportation funding categories to meet local transportation needs
    - Explore the extent to which program requirements and resources can be made to be more comparable for public transportation, highways, non-motorized and rail travel alternatives to encourage investments in all modes of transportation
    - Provide incentives to support a strong network of public transportation options, including bus rapid transit and light rail, which connect housing and jobs as well as improve access to healthy foods, medical care, and other services
- Work with government and non-government organizations to develop and implement model transportation planning policies that encourage transit-oriented developments and other mixed-use development, and increase connectivity among neighborhoods and communities for all transportation modes.
- Work with federal agencies and non-governmental organizations to establish a federal policy that would promote bicycling and walking to public transportation stations by making these connecting trips easier, faster, and safer by:
    - Providing bicycle storage at public transportation stations, bus stops, and city car-share point of departure locations
    - Assessing and addressing safety hazards for pedestrians and bicyclists through safety measures such as well-lighted crosswalks and signal timing, and integrating those safety enhancements for pedestrian and bicycle access to public transportation stations, bus stops, and city car-share locations
    - Removing barriers to pedestrians and bicyclists on roads and intersections near public transportation stations and bus stops
    - Enhancing the public transportation system to accommodate bicyclists and pedestrians

Promote Active Transportation

Active transportation systems should connect the places where people live, learn, work, shop, and play by providing safe and convenient walking and bicycling facilities. The safety of all road users can increase as more people choose active transportation.

Recommendations:

- Promote safe and convenient opportunities for physical activity by supporting active transportation infrastructure, such as:
  - Well-lit sidewalks and shared-use paths
  - Safe roadway crossings
  - Creation of bicycle-supporting infrastructure including shared-use paths and interventions that reduce motor vehicle traffic and vehicle speed on neighborhood streets (e.g. bicycle boulevards)
  - Safe pedestrian and bicycling connections to public transportation
  - Safe and convenient pedestrian and bicycling connections to public park and recreation areas
- Increase opportunities for physical activity by devoting increased resources to non-motorized transportation options.
- Consider incentives for states and regions that reduce vehicle miles traveled per capita and implement active living environments that promote walking and bicycling, using public transportation, and reducing air pollution (including greenhouse gas emissions).
- Provide states with tools necessary to evaluate and effectively increase investments in bicycle and pedestrian infrastructure and programming. Activities to be evaluated could include:
  - Comprehensive street design measures, such as "complete streets," which provide safe and convenient travel for all users of the street, such as expanding space for bicycle lanes and sidewalks, placing bus stops in safe and convenient locations, and making improvements accessible for disabled users
  - Complementary systems of shared-use paths connected to roadways that provide safe places to walk and bicycle for children, the elderly, and the general public
  - Bicycle-supporting infrastructure including shared use paths and interventions that reduce motor vehicle traffic and speed on neighborhood streets to provide direct, safe routes for bicyclists
  - "Safe Routes to School" initiatives including the development of sidewalks, shared-use paths and bicycle infrastructure to ensure that children can walk and bicycle safely to school. Safe Routes to School programs also include support activities, such as education, encouragement, enforcement, and evaluation
- Bring health, transportation and community planners together to develop safe, convenient, and complete pedestrian and bicycle master plans, including an inventory of current sidewalks, bicycle facilities, recreational trails, and shared-use paths, which can be incorporated into city general plans and capital improvement programs.
- Work with state and local transportation and planning officials to integrate and enforce use of pedestrian and bicycle design guidelines and evidence-based safety standards into transportation planning practice and support evaluation of innovative designs.

- Bring together specialists in transportation, energy, community planning and health to establish federally recommended guidelines for the inclusion of active transportation infrastructure in building and development efforts.
- Explore opportunities for increasing availability of funds for establishing active transportation initiatives.

Encourage Healthy Community Design

Healthy community design incorporates elements (such as transportation networks, street designs, and zoning/land use policies) that work synergistically to promote health and safety.

Recommendations:

- Work with government and non-government organizations to develop and implement model transportation and land use planning policies that encourage transit-oriented and mixed-use developments. Encourage:
    - Dense networks of connected streets which serve the needs of all transportation modes; for example, adopting measures such as "complete streets"
    - Roads that include robust infrastructure for bicycling and walking while mitigating the potential adverse effects of motor vehicle travel
- Enable state and local planners to protect residents from local air pollution and noise from high-volume roadways, ports, and airports by discouraging development (including schools) near these air pollution and noise pollution sources and, where possible, constructing barriers to reduce nearby residents' exposure.
- Support research to assist transportation agencies to develop street networks that facilitate active transportation and public transportation by increasing connectivity and limiting block size.
- Provide assistance to local planners to design and locate destinations for children (such as schools, parks, and libraries) within neighborhoods so that children can reach destinations without having to cross busy streets.
- Work with federal, state, and local transportation officials to ensure that all people have access to safe, healthy, convenient, and affordable transportation options regardless of age, income and other socioeconomic factors.
- Support policies that reduce vehicle miles traveled per capita, including land use policies that reduce vehicular travel, increase public transportation service, and increase active transportation infrastructure.

Design to Minimize Adverse Health and Safety Consequences

In some circumstances, a solution to one problem may exacerbate another problem. For example, active transportation improves health overall by providing physical activity and reducing emissions, however, the emphasis on vehicular travel in our current transportation system results in pedestrians and bicyclists to disproportionately suffer from injuries. Therefore,

increasing active transportation may increase the absolute numbers of injuries unless protective and alternate mode infrastructure and policies are concurrently implemented. In addition, decreasing the size and weight of vehicles and increasing adoption of new vehicle technologies will reduce greenhouse gas and other emissions but could result in more injuries from car crashes and impact environmental health in other ways.

Recommendations:

- Support policies that protect pedestrians and bicyclists from motor vehicle crashes, such as:
    - Designing streets to reduce motor vehicle speeds and minimize pedestrian and bicycle injuries
    - Piloting and evaluating policies that assume motor vehicle driver responsibility for accidents involving child pedestrians and child bicyclists in residential neighborhoods and school zones
    - Implementing multimodal level of service indicators as performance measures for roadways that include measurements of pedestrian, bicyclists, and public transportation operability
    - Increasing the adoption of motor vehicle technologies that reduce injuries to pedestrians, such as bumpers designed to minimize pedestrian injury
    - Correcting existing hazards and enhance infrastructure for pedestrians and bicyclists
- Support policies that maximize the benefits of shifting to efficient vehicles, such as:
    - Supporting efforts to reduce size disparities in the fleet of vehicles
    - Supporting motor vehicle design efforts to incorporate features that reduce the likelihood of injury to occupants of other vehicles, bicyclists and pedestrians
    - Reducing the environmental health impact of technologies that improve fuel economy, such as recycling programs for hybrid vehicle battery systems
- Encourage states and communities to consider health impacts as part of transportation planning. Health impact assessments (HIAs) and safety audits may be a useful tool to identify the impact of a new policy, program or major transportation project on community and individual health.
- Enhance coordination with public health agencies for health assessment when such assessments are conducted as part of environmental impact statements.

Require Research and Surveillance

Data and evaluation are critical to ensure that we have robust information on the impact of transportation systems on health as well as to determine whether interventions have their intended effect.

Recommendations:

- Support national, state, and local research to better understand the relationships between transportation, health and safety outcomes.

- In coordination with federal and state transportation agencies, CDC could provide expertise in evaluating programs and activities designed to address the safety and health issues related to transportation. For example, CDC could evaluate:
    - Effectiveness of laws, policies, and programs
    - Fidelity of program implementation
    - Enforcement of transportation policies to improve health and safety outcomes
- Support public health data collection and analysis activities for active transportation and public transportation. Examples include:
    - Improved specificity of external cause-of-injury codes for transportation-related deaths, hospitalizations, and emergency department visits to capture information on traffic-relatedness, vehicle type, and occupant status
    - Comprehensive counts of deaths and improved data estimates of injuries related to all modes of transportation, including pedestrians and bicyclists
    - Systematic counts of users of all modes of transportation, including pedestrians and bicyclists
    - Targeted community level data to track the impact of policies, programs, and services
    - Enhance travel demand modeling capability to reflect all modes of transportation
- Assess the overall traveler health and safety impact of transportation migration (e.g., mode shift), of individuals switching from one form of transportation to another form, and of changing the mix in traffic.
- Encourage the inclusion of health- and safety-related questions in transportation surveys.

Support Professional Development and Job Creation

Training existing workers and enhancing their skills and abilities must be combined with bringing new workers with a variety of skill levels into the fields of public health, public policy, urban planning, and transportation engineering. A broader background will be useful to future transportation professionals.

Recommendations:

- Support the development of professionals who are committed to enhancing the relationship between public health and transportation policy through fellowship programs and development of curricula related to integration of these areas.
- Develop pilot training and technical assistance for state and local entities to conduct HIAs.
- Work with transportation agencies, professional organizations, and educators to insert training on the health effects of transportation planning and engineering into curricula for transportation planning and engineering students and continuing education for professional transportation planners and engineers. Similarly, work to insert training for public health students and practitioners on transportation policy and its effects on health.
- Provide incentives for communities and states to include environmental and public health professionals in planning activities and in implementing community development initiatives.

- Support measures to increase the capacity of traffic police to improve the enforcement of laws and education of the public related to motor vehicle, pedestrian, and bicycle safety.

Foundation for CDC's Transportation Recommendations

In 2007, representatives from CDC created a Transportation Policy Group to develop a more comprehensive approach to identifying and addressing issues related to transportation and health. Their efforts have extended to include work with the U.S. Department of Transportation, as well as non-federal partners such as the American Public Health Association (APHA) and the Healthy Eating, Active Living Convergence Partnership (Convergence Partnership).

In November 2008, CDC, APHA and the Convergence Partnership, in coordination with other government and non-government organizations, hosted "Linking Transportation Policy and Public Health", a meeting of representatives from agencies with an interest in transportation or health issues. The purpose of the meeting was to begin the process of helping these professionals learn more about the intersection of their two fields.

Work by CDC's Transportation Policy Group and the individual programs within CDC, coupled with input received during and after the "Linking Transportation Policy and Public Health" sessions and discussions with other federal agencies, forms the basis of these recommendations.

These recommendations are intended as a framework for policymakers to consider in order to strengthen transportation policies and programs by including public health and safety.

Glossary

Active transportation – any self-propelled, human-powered mode of transportation.

Complete Streets – roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users, including, but not limited to, pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Specific aspects of a complete street are dependent on the context in which the roadway is located (urban, rural, heavy traffic volume, numerous pedestrian destinations, etc.), and may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more.

Greenhouse gas emissions - gases that trap heat in the atmosphere such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Some greenhouse gases such as CO_2 occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities, such as CO_2, CH_4, N_2O, and fluorinated gases.

Health impact assessment (HIA) - a method by which a policy, program, or project may be judged as to its potential effects—and distribution of those effects—on the health of the population.

High occupancy vehicle lane - Exclusive road/traffic lane limited to buses, van/carpools, & emergency vehicles.

Highway Trust Fund - The United States Highway Trust Fund was established in 1956 to enable financing for maintenance of the United States Interstate Highway System and certain other roads. The fund has three accounts - the 'Highway Account', the 'Mass Transit Account' and the 'Leaking Underground Storage Tank Trust Fund'. Money in the fund is raised via a federal fuel tax per gallon on gasoline and diesel fuel and related excise taxes.

Public transportation - Transportation by bus, rail, or other conveyance, either publicly or privately owned, which provides to the public general or special service on a regular and continuing basis. Also known as "mass transportation", "mass transit" and "transit."

Safe Routes to Schools - The Safe Routes to Schools Program is a Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration, created by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act (SAFETEA-LU). The purposes of the program are: 1) to enable and encourage all children to walk and bicycle to school; 2) to make bicycling and walking to school a safer and more appealing transportation alternative; and 3) to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity (approximately 2 miles) of primary and middle schools (Grades K-8).

Safety audits and assessments - a method by which a policy, program, or project may be judged as to its potential effects on the safety of the population.

Shared-use paths - A path physically separated from motor vehicle traffic by an open space or barrier and either within a highway right-of-way or an independent right-of-way, used by bicyclists, pedestrians, joggers, skaters and other non-motorized travelers.

Transit-oriented development - Compact, mixed-use development near transit facilities with high-quality walking environments.

Vehicle miles traveled (VMT) - A unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle. Each mile traveled is counted as one vehicle mile regardless of the number of persons in the vehicle.